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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/462,067 | 01/05/2000 | MASAKAZU FURUKAWA | P18520 | 4630 |

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| EXAMINER |
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PAIK, SANG YEOP

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| ART UNIT | PAPER NUMBER |
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3742

DATE MAILED: 03/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/462,067

Applicant(s)

FURUKAWA ET AL.

Examiner

Sang Y Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 8-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7 and 25-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 7 and 25, it is unclear what are compared elements for the claimed ratio.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 5, 26-28, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura et al (US 5,151,871) in view of Kawanabe et al (US 6,133,557) or Yoshida et al (US 6,080,970).

Matsumura et al shows a ceramic heater having a ceramic substrate (13) with a heating body (14) formed on the surface of the ceramic substrate and a surface opposite the surface having the heating body being a heating surface. However, Matsumura et al does not explicitly show that the ceramic substrate is a disc-shaped.

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Kawanabe et al or Yoshida et al shows a ceramic heater including a disc-shaped ceramic substrate made of aluminum nitride. It is taught that the aluminum nitride provides a high resistance to corrosion while providing high heat resistance. In view of Kawanabe et al or Yoshida et al, it would have been obvious to one of ordinary skill in the art to adapt Matsumura et al with a disc-shaped ceramic substrate to accommodate and to heat uniformly a semiconductor wafer which is usually in the form of a disc.

With respect to claims 3 and 5, Matsumura et al shows that the heating body includes elements such as lead, tungsten, molybdenum, nickel or noble metals such as platinum or palladium. Kawanabe et al also shows that a heating body is made of metal particles such as tungsten or molybdenum.

With respect to claims 27 and 28, Matsumura et al shows that the ceramic substrate has the thickness of 1 to 20 mm and the heating body thickness of 0.1 to 100 μm .

3. Claims 4, 6 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura et al in view of Kawanabe et al or Yoshida et al as applied to claim 1, 3, 5, 26-28, 32 and 33 above, and further in view of Okuda et al (US 4,804,823).

Matsumura et al in view of Kawanabe et al or Yoshida et al discloses all the structure claimed except the heating body having metal particles and metal oxides.

Okuda et al shows a heating body having metal particles such as TiN or WC with metal oxides of aluminum, yttrium or magnesium. Okuda et al further teaches that the oxides can make up to 10% weight when provided with TiN or up to 40% by weight when provided with WC to adjust the resistance value and to improve the adhesion to the ceramic substrate. In view of Okuda et al, it would have been obvious to one of ordinary skill in the art to adapt Matsumura et

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al, as modified by Kawanabe et al or Yoshida et al, with the heating body having the claimed metal particles and oxides to form a desired heating resistance while improving the adhesion of the heating body to the ceramic substrate.

With respect to claim 6, Okuda et al shows a non-oxidizing metal such as Ni to cover the exposed portion of heating body. It would have been obvious to one of ordinary skill in the art to have an non-oxidizing metal such as Ni on the exposed heating body such that when electrical terminals are attached to the heating body, it can be done without degradation if the heater is used over a long period of time.

With respect to claim 30, Kawanabe et al shows the metal particles having the particle size of 1.0 um. In view of Kawanabe et al, it would have been obvious to one of ordinary skill in the art to use the metal particle size within the claimed range and shape to form a well mixed metal particles to form heating body having uniformly dispersed particles.

4. Claims 7 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumura et al in view of Kawanabe et al or Yoshida et al as applied to claim 1, 3, 5, 26-28, 32 and 33 above, and further in view of Kubota et al (US 5,643,483) or Kimura (US 5,331,134).

Matsumura et al in view of Kawanabe et al or Yoshida et al discloses all the structure claimed except the claimed ratio.

Kubota et al or Kimura shows the cross sectional of the heating body having the claimed ration of 2000 and 180, respectively. In view of Kubota et al or Kimura et al, it would have been obvious to one of ordinary skill in the art to provide the ratio within the claimed range so that the heating body is set to a desired electrical resistance to generate the desire heating temperature uniformly along the heating surface.

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Response to Arguments

5. Applicant's arguments with respect to claims 1, 3-7 and 25-33 have been considered but are moot in view of the new ground(s) of rejection.

With respect to claims 14-16, they are continued to be withdrawn from consideration under the restriction requirement.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y Paik whose telephone number is 703-308-1147. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teresa Walberg can be reached on 703-308-1327. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3463 for regular communications and 703-305-3463 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0861.

S. Paik

Sang Y Paik
Primary Examiner
Art Unit 3742

syp
March 13, 2002